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Exploring the Distribution of Tourism Resources in Kyrgyzstan under the Background of the Belt and Road Initiative and Swot Analysis

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Abstract

The aim of the study was to assess the distribution and potential of tourism resources in Kyrgyzstan within the context of the Belt and Road Initiative (BRI). Utilizing geospatial analysis, nearest neighbor analysis (NNA), and geographic concentration index, the study reveals the concentration of various types of tourism resources across Kyrgyzstan's regions. Natural resources such as geological landscapes and water bodies are found to be dispersed, with significant concentrations in Chuy and Issyk-Kul regions. Cultural and religious landscapes, on the other hand, are highly clustered in Bishkek and Osh. The study identifies key strengths, such as Kyrgyzstan's rich and diverse tourism resources, but also highlights weaknesses including infrastructure limitations and language barriers. Opportunities arise from the deepening China-Kyrgyzstan relations under the BRI, while threats include potential environmental pressures and over-commercialization. The findings provide a comprehensive understanding of Kyrgyzstan's tourism landscape, offering actionable insights for leveraging the BRI to enhance tourism development in the country.

Keywords

Geospatial analysis; Cultural exchanges; Travel agencies; Macroeconomics; International relationships

Introduction

The Belt and Road Initiative (BRI), which includes the Silk Road Economic Belt and the 21st Century Maritime Silk Road, is a transnational economic project led by China since 2013 and involving almost 70 countries. Kyrgyzstan in turn has border and

cultural ties with China (Eom, 2017; Xu *et al.*, 2020; Zou, Shang and Wei, 2023). With more than 2000 years of history of trade and cultural exchanges, the two countries established diplomatic relations in 1992 (Kantarci, 2007). Kyrgyzstan has responded favourably to the BRI and during a state visit to China, the Kyrgyz President and his Chinese counterpart signed a Joint Declaration of the People's Republic of China and the Kyrgyz Republic on Establishing a Comprehensive Strategic Partnership for a New Era (2023). Understanding the dynamics of diplomatic and economic relations between these two states is important for understanding the peculiarities of their development. The tourism sector remains one of the most important areas of development in Kyrgyzstan at the moment. More than other sectors, it is influenced by international trends because it depends on the inflow of tourists, mainly foreign tourists (Galikhanov *et al.*, 2024). In this regard, the interaction between Kyrgyzstan and China within the framework of the BRI largely affects the way in which the development of this sphere takes place.

Kyrgyzstan, with its rich cultural heritage and diverse natural landscapes, stands to benefit from increased integration with China through the BRI. However, the potential for tourism development in Kyrgyzstan under the BRI framework remains underexplored, particularly regarding the distribution of tourism resources and the challenges that may arise from this increased connectivity. The scientific problem addressed by this study is the need to understand the distribution of tourism resources in Kyrgyzstan in the context of the BRI and to identify how these resources can be optimally utilized to enhance tourism development while mitigating potential risks.

A study in this direction will enable us to assess the implications for both countries in terms of tourism growth. Therefore, assessments of the interactions between these countries within the framework of the initiative remain relevant. Nevertheless, the very process of assessing these components is arduous. This is due to the fact that in order to assess the impact of the initiative on the tourism sector of both countries, it is not enough to only assess their interaction within the framework of the initiative but also to analyse the landscape of Kyrgyzstan, its monuments, as well as its carrying capacity and tourism infrastructure. Many of these points have been explored in the paper, which allows us to draw more precise conclusions. A large number of scholars have been involved in the assessment of Kyrgyzstan's tourism sector. Thus, Beksultanova *et al.* (2021) have paid special attention to the growing importance of studying the traditional roots of Central Asian societies in order to preserve the cultural mentality and contribute to the global community. However, they did not propose clear programs that could help improve public perceptions of national culture. Kozhokulov *et al.* (2019) focused their attention on the tourism situation in the Issyk-Kul region. The scholars described the improvement of the tourism sector in the region, as well as its positive impact on its socio-economic condition.

In turn, Akbar *et al*. (2021) conducted a regional assessment of tourism development in the country, specifically between the Almaty and Issyk-Kul regions, with a focus on cross-border travel opportunities. While scholars have highlighted the advantages of actively fostering these relationships between regions, they have not sufficiently addressed the associated risks. Turdumambetov and Kızı (2023) examined Kyrgyzstan's tourism sector in general in relation to the opening of visa-free travel. The scholars showed that this policy has a mainly positive impact on the development of the country's

economy and on the tourism sector. However, they paid little attention to the problems existing within its framework and did not propose methods for their solution. Mogilevskii (2021), in turn, considered the impact of the BRI on the economic and social development of Kyrgyzstan, describing the overall positive impact of the initiative. Researchers also offered some recommendations for public policy in this direction but paid little attention to the tourism sphere.

The hypotheses guiding this study are threefold. Firstly, it is hypothesized that the distribution of tourism resources in Kyrgyzstan is uneven, with significant concentrations in regions such as Chuy and Issyk-Kul, potentially influencing the formulation and implementation of tourism strategies. Secondly, the study posits that the Belt and Road Initiative (BRI) presents substantial opportunities for tourism growth in Kyrgyzstan; however, these opportunities are likely to be accompanied by infrastructural and environmental challenges that need to be addressed to ensure sustainable development. Lastly, it is hypothesized that enhancing cultural and academic exchanges between China and Kyrgyzstan will be pivotal in promoting tourism and overcoming existing communication barriers, thereby fostering stronger bilateral ties and mutual understanding. The primary objective of this study is to assess the distribution of tourism resources in Kyrgyzstan and to analyze the potential impacts of the BRI on the country's tourism sector. By conducting a geospatial analysis and SWOT assessment, the study aims to provide actionable insights for policymakers and tourism enterprises to develop strategic plans that capitalize on the BRI while preserving Kyrgyzstan's cultural and natural heritage.

Methodology

The Nearest Neighbor Analysis (NNA) is a technique used to compare the distribution of points in a specific area with a random distribution. The analysis involves calculating the average distance between each point and its nearest neighbor, then comparing this with a theoretical average distance if the points were randomly distributed. This comparison is expressed through the R scale.

The R scale is calculated using the following formulas (1,2):

$$R = \bar{r}_i / r_E, \quad (1)$$

$$r_E = \frac{1}{\frac{2}{\sqrt{m/A}}} = \frac{1}{\frac{2}{\sqrt{D}}}, \quad (2)$$

where: $\bar{r}_i$– average value of the distance between each point and its nearest neighbour; r_E– theoretical nearest neighbor distance when the point elements are randomly distributed, m represents the number of point elements; A – study area; D – number of point elements per unit area. If r >1 is random distribution, and if r <1 is agglomeration distribution. Its nearest-neighbour index in this paper is realized through the calculation of ArcGis10.8 spatial statistics tool.

The Lorenz curve was first used for the degree of unevenness of social income and can also be used for equilibrium statistics of the spatial distribution of factors (Soltisz and Veeraraghavan, 2023). Imbalance index (S) is mainly used to measure the degree of balanced spatial distribution of geographic elements (Hu, Teng and Fan, 2021), and in this paper the imbalance index is used to indicate the degree of balanced distribution of tourism resources in different regions of Kyrgyzstan. The calculation formula is (3):

$$S = \frac{\sum_{i=1}^{n} Y_i = 50(n+1)}{100n - 50(n+1)}, \quad (3)$$

where: n – number of provincial administrative units in Kyrgyzstan; Y_i– cumulative percentage of the i-th position after the weight of the number of provincial tourism resources in the country is ranked from largest to smallest. S takes values between 0 and 1. When S is equal to 0, it indicates that the kind of tourism resources are distributed evenly in each city or region, and when S is equal to 1, it indicates that all the tourism resources of the kind are concentrated in one city or region.

Geographic concentration index (G) can indicate the degree of concentration of the distribution of geographic elements, this paper uses the geographic concentration index (G) to explore the degree of concentration of the spatial distribution of tourism resources in Kyrgyzstan. The formula is as follows (4):

$$G = 100\sqrt{\sum_{i=1}^{n}\left(\frac{X_i}{T}\right)^2}, \quad (4)$$

where: X_i– number of tourism resources in the i-th region of Kyrgyzstan; T – total number of tourism resources of this kind in the whole country of Kyrgyzstan; n – number of regions and cities in Kyrgyzstan. The larger value of G indicate a higher degree of concentration, assuming that the average distribution of tourism resources is $G = G_0$; if $G > G_0$, it means that the distribution of tourism resources is concentrated, if $G < G_0$, it means that the distribution of tourism resources is decentralized.

Kernel density analysis can calculate the density of point elements around each output raster, which can intuitively reflect the centralized discrete degree of tourism resources (Ge, Zheng and Tong, 2023; Ruiz-Real *et al.*, 2022; Zhao, He, and Ao, 2023), the formula is (5):

$$f(x) = \frac{1}{nh}\sum_{i=1}^{n} k\left(\frac{x - x_i}{h}\right), \quad (5)$$

where: K – kernel density function; h – bandwidth; n – number of points in the threshold range; $(x - x_i)$ – distance from the valuation x point to the event x_i.

In this paper, the kernel density analysis is calculated by the kernel density analysis tool of ArcGis 10.8 technology platform, all parameters are set as default, and the search and

storage radius are 50 km. A total of 169 natural tourist resources and 46 historical monuments and landscapes of Kyrgyzstan were collected through Internet searching and consulting the literature. They include 46 canyon landscapes, 34 mountain pass landscapes, 14 cave landscapes, 6 special geological landscapes, 36 lake landscapes, 11 spring landscapes, 7 waterfall landscapes and 15 reservoir landscapes. Digital elevation model (DEM) data, lake data, glacier data, and administrative division data for topographic mapping were obtained through the NASA and ERSI websites, and river systems were obtained through DEM hydrologic analyses.

Point of interest (POI) data are location-based spatial data containing a range of elements such as name, latitude, longitude, and category (Ma and Peng, 2023; Wang, Wu, and Qi, 2022a). Geospatial data, such as POI, are characterised by easy access and processing, large data volume, wide coverage, and high accuracy compared with traditional statistical data such as yearbooks (Pan *et al.*, 2023; Wang *et al.*, 2022b). As a result, POI data is an important source of geographic data for researchers conducting studies related to human geography, such as exploring the distribution and influencing factors of service industries (Yang, Bai, and Zhang, 2021; Zhou, 2022). This study utilized the POI data platform to gather 159 data from parks, 52 data from museums, 37 data from culture and art centers, 34 data from sculpture landscapes, 16 data from fountain landscapes, 17 data from specialty markets (bazaars), 1037 data from mosques, and 40 data from churches in Kyrgyzstan. The study cleaned and screened the acquired data, imported it into the ArcGis10.8 technology platform, and projected it to determine the spatial distribution of various tourism resources in Kyrgyzstan. We then analyzed the spatial distribution pattern of tourism resources in Kyrgyzstan using relevant tools in the ArcGis10.8 technology platform, including nearest-neighbour analysis, Lorenz curve, imbalance index method, geospatial index method, and kernel density analysis method.

The research employed a variety of scientific methods. The analysis, which assessed both quantitative and qualitative data in the context of the country's geographical features and its interaction with China, stands out among them. The historical method was also used to assess the cultural and, in fact, historical peculiarities of Kyrgyzstan’s development and its impact on the possibilities of tourism development. We also used statistical methods of assessment, such as nearest neighbour analysis (NNA), geographic concentration index analysis, the construction of the Lorenz curve, and others, with the help of which we considered individual indicators that characterise the opportunities for the development of tourism. The graphical method was used to depict all these variables.

Results

The Kyrgyz Republic, located in central Asia, is a must for China’s trade to the western part of the Eurasian continent via the land-based Silk Road, bordering Kazakhstan in the north, China in the east, Tajikistan in the south, and Uzbekistan in the west. The territory of Kyrgyzstan is mountainous and hilly, with the whole of the country at an altitude of more than 500 m above sea level and 90% of the territory at an altitude of more than 1500 m above sea level. The Tian Shan Mountains and the Pamir Plateau-Alai Mountains straddle the border between China and Kyrgyzstan, with snow-capped mountains and glaciers spreading widely. The Chuy River Valley and the Fergana Basin are Silk Road towns with a long history and culture. There are scattered alpine lakes such

as Issyk-Kul Lake and Song-Kul Lake. Kyrgyzstan has colourful nomadic specialities such as falconry and horse racing. Kyrgyzstan's unique natural environment, rich culture, and special geographic location have created unique and colourful tourism resources (Figure 1).

Figure 1: Topographic map of Kyrgyzstan

China was the world's top source and consumer of outbound tourism for many consecutive years before the COVID-19 outbreak (Zhou, 2022). Beginning January 8, 2023, China resumes cross-border travel in an orderly manner. On January 30, 2023, data released by China's National Immigration Administration showed that 741 thousand outbound trips were made by Chinese domestic residents during the Spring Festival (Santos, Castanho and Lousada, 2019). The China Outbound Tourism Market Prosperity Report (2023) released by the World Tourism Alliance, shows that China's three-year backlog of demand for outbound travel has exploded in a concentrated manner, and that the prosperity index of China's outbound tourism market in the first half of 2023 exceeded the level of the first half of 2019. The report notes that several types of destinations could see significant growth opportunities, including countries that have shown strong signals of friendliness towards China and healing destinations. The year 2023 marked the 10th anniversary of the BRI, which will usher in new growth in tourism for Chinese citizens to BRI-related countries and regions.

The results of geospatial analysis of different types of tourism resources in Kyrgyzstan are shown in table 1. Geological landscapes include:

- canyons, mountain passes, caves and special geological landscapes;
- water landscapes include lakes, reservoirs, springs and waterfalls;
- parks include general parks, city parks and national nature parks;
- anthropogenic landscapes include museums and centers of culture and art;
- religious landscapes include mosques and churches;
- humanistic landscapes include sculptures, fountains, and specialty markets (bazaars).

Kyrgyzstan has nine provincial administrative units, comprising seven regions, Chuy region, Issyk-Kul region, Osh region, Naryn region, Batken region, Jalalabad region and Talas, region and two municipalities, Bishkek, and Osh. In this paper, Osh means Osh region. In this paper, the cities of Bishkek and Osh City were not involved in the geomorphic landscape and waterscape calculations, and the total number of districts was calculated as seven.

Table 1: Geospatial analysis results of tourism resources in Kyrgyzstan

Tourism resources	*Quantities*	*Nearest Neighbor Analysis (NNA)*				*Imbalance Index (S)*	*Geographic Concentration Index Analysis*	
		R	*Z-scores*	*P-values*	*Distribution type*		*G*	G_0
Geological landscape	100	1.11	2.15	0.03	Dispersed	0.40	44.12	37.78
Water landscapes	69	1.26	4.16	0	Dispersed	0.36	43.21	
Historical monuments	43	1.21	2.73	0.01	Dispersed	0.44	41.14	33.33
Parks	159	0.72	-6.84	0	Clustered	0.38	39.43	
Cultural landscapes	89	0.52	-11.42	0	Clustered	0.53	44.66	
Religious landscape	797	0.41	-36.88	0	Clustered	0.35	38.49	

Kyrgyzstan is a mountainous country; 93% of the area is mountainous, and 90% of the area is more than 1500 m above sea level, with an average altitude of 2750 m, the highest peak being Tomur at 7439 m. The main mountain ranges in Kyrgyzstan are the Ala-Too Range, Tian Shan Mountains, Ferghana Range, and Alay Ranges. Kyrgyzstan is rich in mountain tourism. Famous peaks in Kyrgyzstan include Tomur Peak, Khan Tengri Peak, Lenin Peak, Semyonov Peak, and Manas Peak, all of which are above 4000 m above sea level and are the tourist attractions for mountaineers from all over the world. The most popular are Semyonov Peak and nearby peaks in the Ala-Too Range in the north, as well as Lenin Peak and nearby peaks in the Alay Mountains in the south. A large number of geological landscapes, such as gorges, passes, and caves, are distributed among the mountainous undulations, such as Alamedin Gorge, Suusamyr Valley in Ala Too Range, Skazka (Fairytale) Canyon near Issyk-Kul Lake, The Seven Bulls of Jeti-Oguz Red Formation, and Chil Ustin Cve. Figure 2 shows the distribution of famous canyons, passes, caves, and special geological landscapes in Kyrgyzstan that were collected in this study. All regions of Kyrgyzstan contain the geological landscape, but the Ala-Too Range-Chuy River Valley, Tian Shan Mountains-Issyk-Kul Lake, and the Alay Mountains in the south have a more concentrated distribution.

Kyrgyzstan has more than 8000 glaciers covering an area of about 8100 km2, or about 30% of the total land area and 4% of the surface area, which is an important tourist resource (Dubashvili, 2004). The Ala-Too Range, Tianshan Mountains, Alay Mountains, and Fergana Mountains are home to glaciers. The most famous is the Inylchek (also known as Engilchek, Enilchek) glacier, which is located near Khan Tengri Peak in the Tian Shan Mountains. The glacier near Semenov Peak, located in the northern Alatau Mountains, is also well-travelled. Kyrgyzstan boasts 1923 picturesque lakes, primarily

replenished by snow and ice melt water, with the majority situated between 2500 m and 4000 m in altitude. The largest and most famous of these lakes is Issyk-Kul, located in North-Eastern Kyrgyzstan, in the faulted basin between the Tian Shan Mountains and Ala-Too Ranges, with a lake area of 6332 km2. Issyk-Kul Lake, with an average elevation of 1602 m, is the world's second largest alpine lake after Lake Titicaca in South America and the second largest lake in Central Asia, after the Aral Sea. Issyk-Kul Lake, with its high salinity (5.8%) and year-round frost, was known as the "Sea of Heat" and the "Pool of Great Clarity" during the Tang Dynasty in China, when the famous Chinese monk and traveller Xuanzang passed through and left a record of his visit to the area. Song-Kul Lake is the second largest lake in Kyrgyzstan, with an altitude of 3016 m and an area of 278 km^2. Located in the western section of the Tian Shan Mountains, the lake area is an important summer pasture, and there are a large number of yurt campgrounds around the lake available for tourists to experience the accommodation. Chatyr Kel Lake is the highest lake in the Tian Shan Mountains, at an altitude of 3500 m, located in the southern part of the Naryn region, close to the Torugart Pass to China. Figure 2 illustrates the distribution of lakes in Kyrgyzstan.

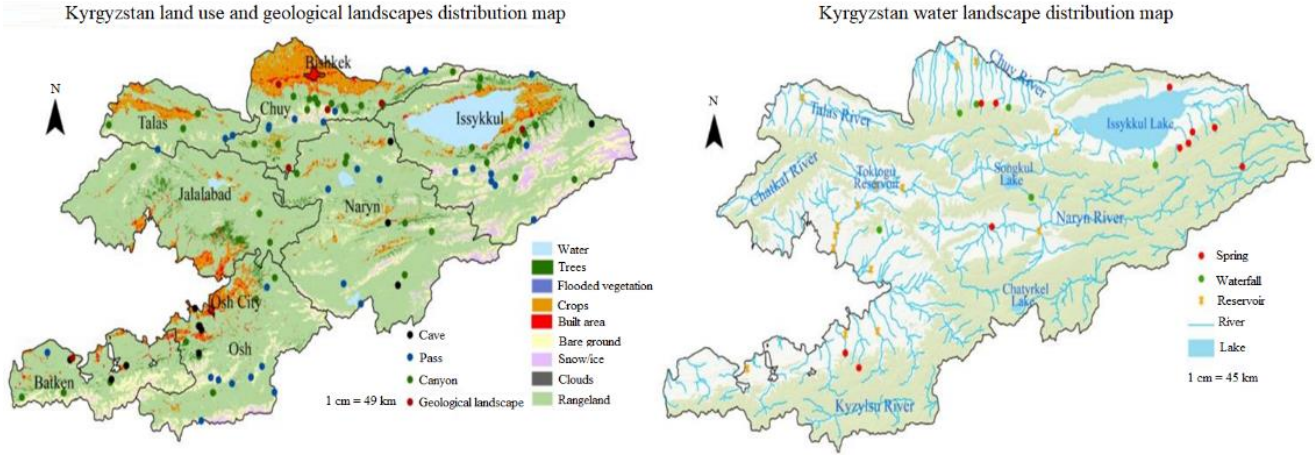

Figure 2: Distribution map of natural tourism resources in Kyrgyzstan

Kyrgyzstan is a landlocked country, but due to its position on the windward slopes of the mountains in the prevailing westerly belt of the northern hemisphere, it has a large number of glaciers and snow-capped mountains that have formed a dense water network during the melting of snow and ice. Kyrgyzstan boasts over 2000 rivers that span over 10 kilometres, contributing to a total length of nearly 35000 km. Important rivers in Kyrgyzstan include the Naryn River, Chuy River, Talas River, and others. In order to rationalise the use of water resources, Kyrgyzstan has built a large number of reservoirs that are also known as high-quality tourist resources, such as the famous Toktogo Reservoir. The territory of Kyrgyzstan contains a large number of underground fresh and mineral waters, mainly in mountainous regions, and a number of hot springs and springs containing special minerals have been developed as tourist resources, for example, Kyzyl-Suu Hot springs and Altyn-Arashan mineral sources (Musa *et al.*, 2021).

Table 1 reveals that Kyrgyzstan's geological landscape has a closest neighbour index of R = 1.11, indicating a dispersed distribution type. From the Lorenz curve, it can be seen that four regions, Chuy region, Issyk-Kul region, Osh region, and Naryn region, have

84% of the geologic landscapes of Kyrgyzstan, while three regions, Batken, Jalalabad, and Talas, have fewer geologic landscapes (Figure 3). Geographic concentration index G=44.12, which is greater than G_0=33.33, indicates that the distribution of geological landscapes in Kyrgyzstan is clustered, but the degree of clustering is not high. From the results of kernel density analysis of tourism resources of geological landscapes, the geological landscapes of Kyrgyzstan are highly clustered in the three regions of Chuy region, Issyk-Kul region, and Osh region, forming three clear agglomerations.

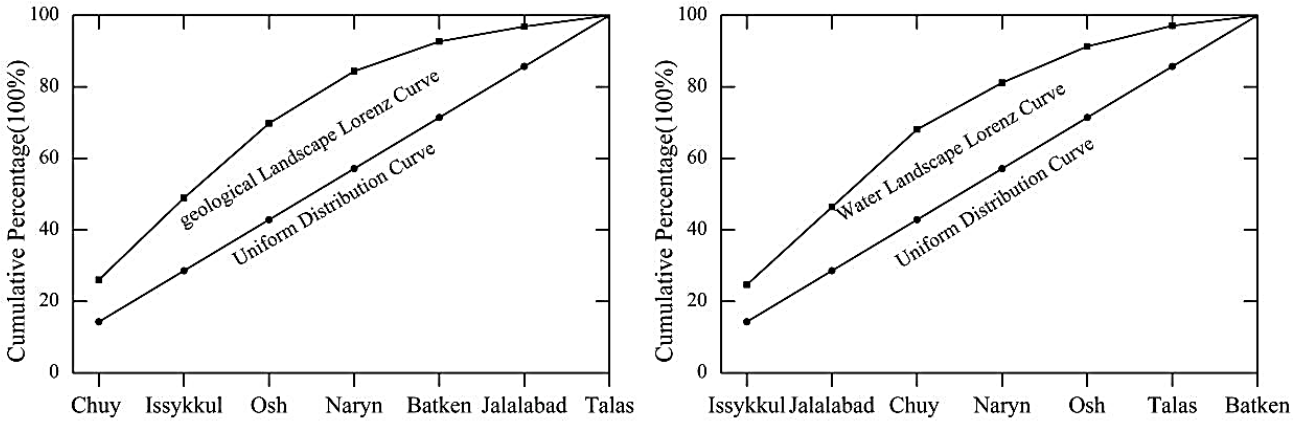

Figure 3: Kyrgyzstan physical natural tourism resources Lorenz curve

From table 1, the nearest-neighbour index of Kyrgyz waterscape R=1.26, and the distribution type is dispersed. The imbalance index S=0.36 is relatively unbalanced, but the degree of balance exceeds that of the tourism resources of the geological landscape of Kyrgyzstan. As can be seen from the Lorenz curve in Figure 4, the number of tourism resources in the waterscape of four regions Issyk-Kul region, Jalalabad region, Chuy region and Naryn region account for 81% of the country. The geographic concentration index of tourism resources in Kyrgyzstan's waterscapes, G=43.21, which is greater than G_0=33.33, but less than 44.12 for geological landscapes. It indicates that the spatial distribution of the Kyrgyz waterscape shows agglomeration, but the degree of agglomeration is not high. From the kernel density analysis map in figure 4, the Kyrgyz waterscape forms a clear agglomeration around the Ala-Too Range in the Chuy region, and also in the Jalalabad region, the Osh region, and the Issykkul region, but to a lesser extent than in the Chuy region.

Kyrgyzstan has been an important junction of the Silk Road since ancient times and has historically played a role in bridging East and West, connecting Europe and Asia, with a rich and splendid history and culture and colourful human activities (Zou *et al.*, 2022). Examples include Tash-Rabat, a caravanserai on the Silk Road, Suyab, considered the birthplace of the famous Chinese poet Li Bai, and the ruins of the famous Burana Tower, Mount Suleiman, the Shah-Fazil mausoleum, and many others.

Figure 5A shows the distribution of historical monuments in Kyrgyzstan, and the distribution of historical monuments in Kyrgyzstan is relatively decentralised and uneven from region to region. Historical monuments of Kyrgyzstan are generally located at low altitudes, such as the Chuy River Valley, the Fergana Basin, and the vicinity of

Lake Issyk-Kul. Parks are the daily resting places of the Kyrgyz people; as can be seen from Figure 5B, the national parks of Kyrgyzstan are distributed in all regions; city parks are obviously clustered in the capital city of Bishkek; and the general parks are more distributed in the Fergana basin, the Chuy River valley, Issyk-Kul Lake, and the Talas River valley. Museums in Kyrgyzstan are used for the study, collection, preservation, interpretation, and presentation of tangible and intangible heritage, notably the Kyrgyzstan State Historical Museum, the Saimalu-Tash Reserve Museum, and others. There are also a number of cultural and art centres in Kyrgyzstan, most notably the Ruh-Ordo Cultural Centre in Cholpon Ata, a famous tourist town on the north coast of Issyk-Kul. As can be seen from Figure 5C, cultural landscapes such as museums, cultural centres, sculptures, bazaars, and fountains in Kyrgyzstan are mainly concentrated in the capital city of Bishkek, Osh City, the Chuy River Valley, and near Issyk-Kul Lake. The main religion in Kyrgyzstan is Islam. As can be seen from Figure 5D, Kyrgyzstan has a very large number of mosques and is very widely distributed, with a concentration of mosques in the Fergana Basin, the Chuy River Valley, and the Issyk-Kul Basin.

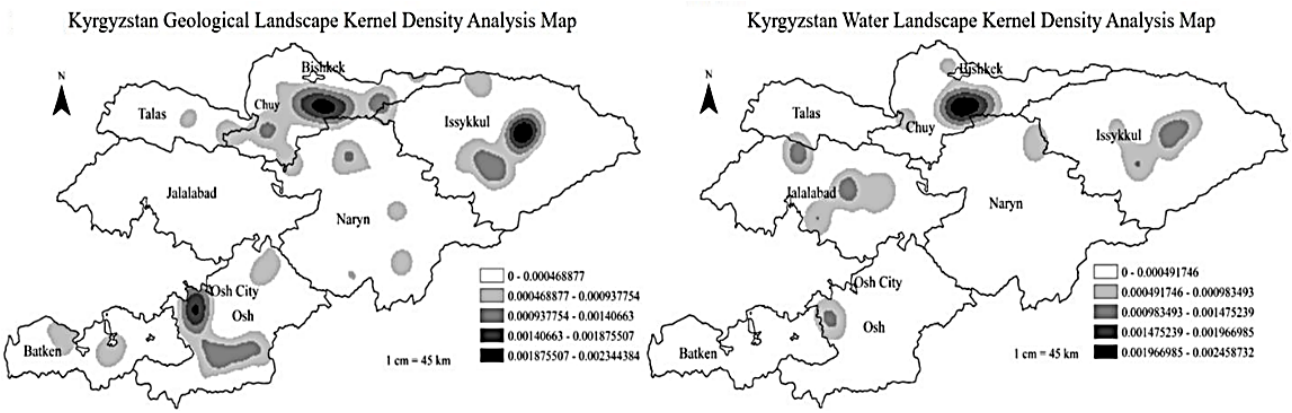

Figure 4: Kernel density analysis map of Kyrgyzstan's natural tourism resources

The nearest-neighbour index of Kyrgyzstan's historical monument landscape is R=1.21, and the distribution type is dispersed, while the nearest-neighbor index of parks is R=0.72, the nearest-neighbor index of cultural landscapes is R=0.52, and the nearest-neighbour index of religious landscapes is R=0.41, and the distribution type is agglomeration in all of them. Kyrgyzstan's historical monuments imbalance index S=0.4, parks imbalance index S=0.38, cultural landscapes imbalance index S=0.53, and religious landscapes imbalance index S=0.35, suggesting that cultural landscapes tourism resources are clustered to a high degree in different regions of Kyrgyzstan, and that historical monuments, parks, and religious landscapes are relatively evenly distributed among different regions of the country. As can be seen from the Lorenz curve in Figure 6, the distribution of tourism resources of historical monuments and cultural landscapes varies considerably among the regions of Kyrgyzstan. Four regions, Chuy, Issyk-Kul, Naryn, and Jalalabad, have 74.4% of the country's historical monument tourism resources. The Bishkek and Chuy regions, the Issyk-Kul region and the Osh region have 74.15% of the country's cultural and landscape tourism resources.

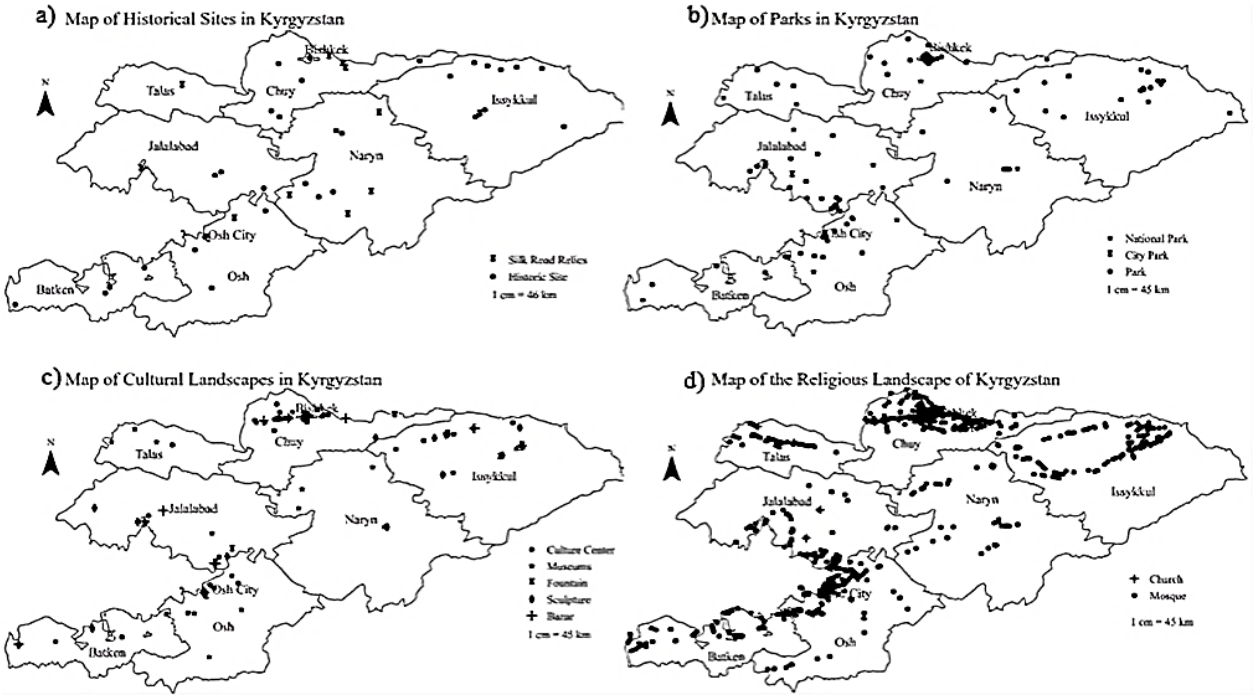

Figure 5: Distribution of tourism resources of Kyrgyzstan's human landscape

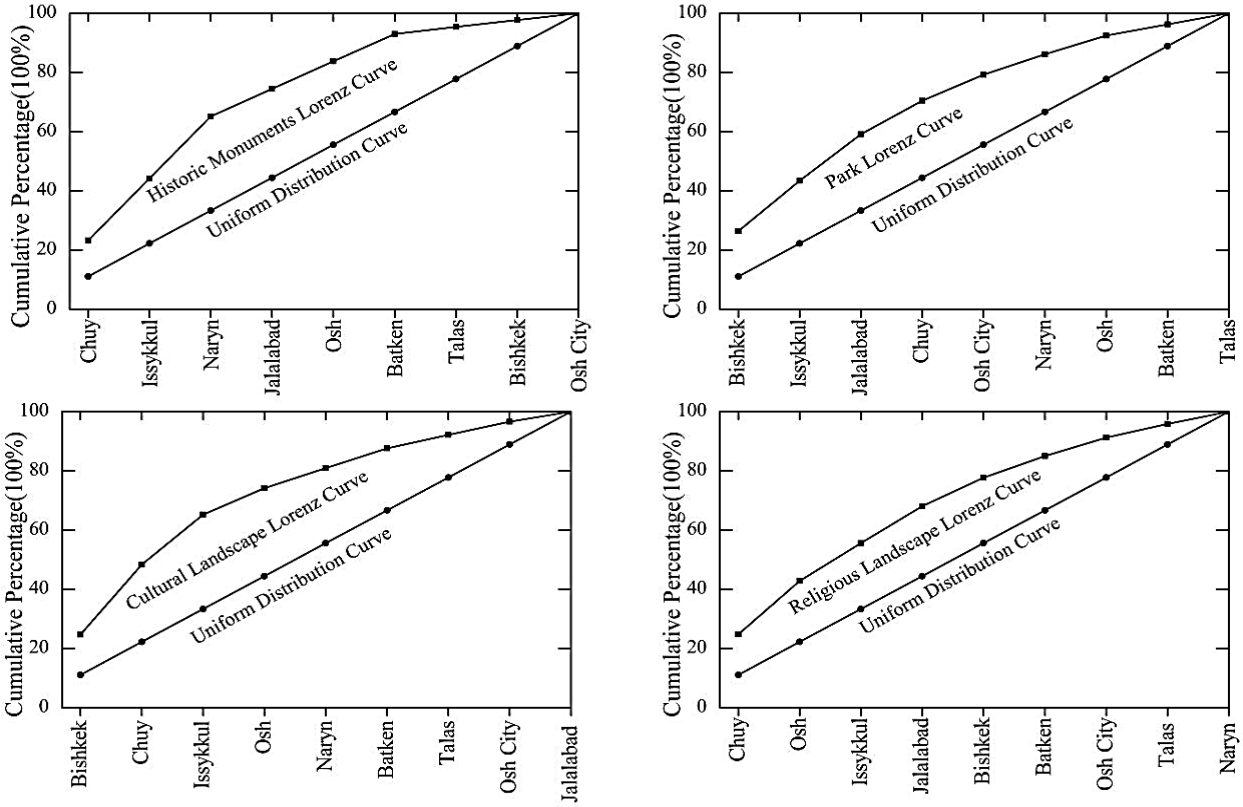

Figure 6: Lorenz curve of humanistic tourism resources of Kyrgyzstan

According to the analysis of kernel density in figure 7, it can be seen that the distribution of tourism resources of historical monuments in Kyrgyzstan is relatively decentralized, tourism resources of parks and cultural landscapes have formed one agglomeration centre in Bishkek, and religious tourism resources have formed two agglomeration centres in Bishkek and Osh City.

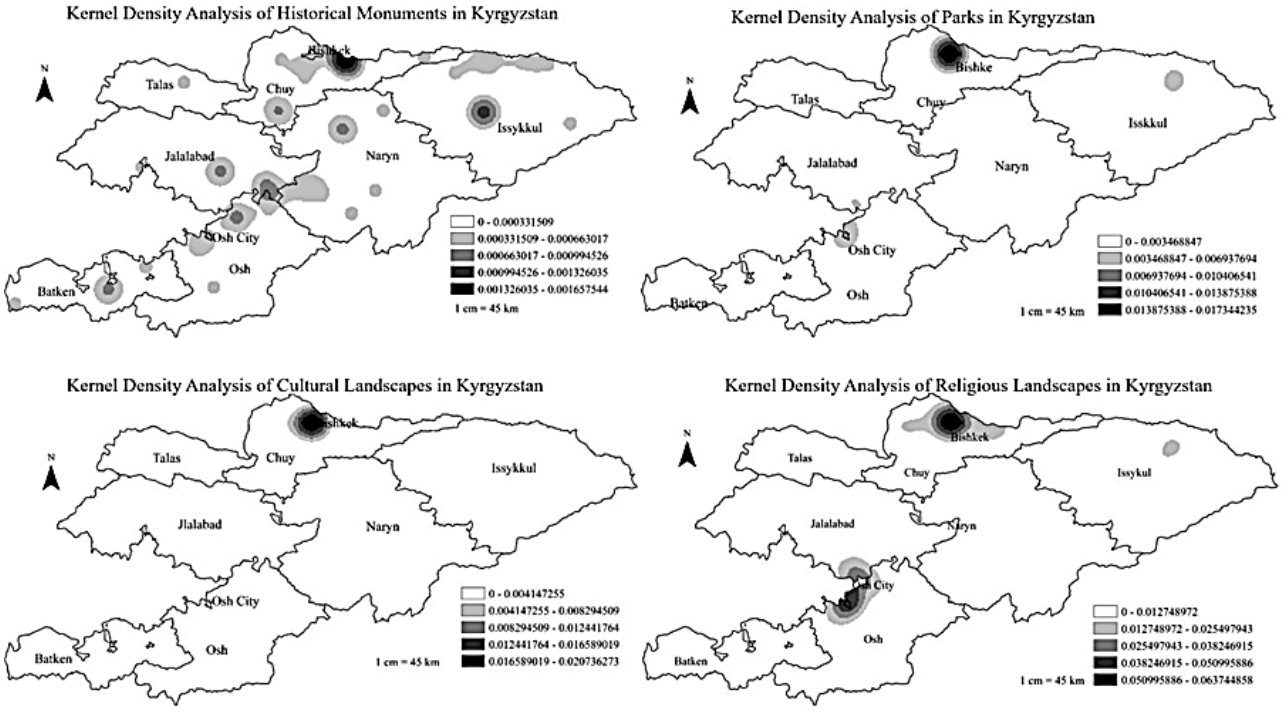

Figure 7: Kernel density analysis of humanistic tourism resources in Kyrgyzstan

In general, Kyrgyzstan's tourism resources are rich and varied, with distinct local characteristics. The distribution of natural tourism resources and historical sites is relatively decentralized, spanning across seven regions and two cities throughout the country. Humanistic tourism resources are highly concentrated, particularly in the Bishkek, Chuy, and Issyk-Kul regions. This is primarily due to the high costs associated with constructing humanistic tourism infrastructure, such as museums, parks, sculptures, fountains, and cultural centers, which require substantial market capacity for successful operation. Conversely, Talas, Naryn, Jalalabad, Osh, and Batken regions have relatively scattered tourism resources, with fewer resources compared to regions like Chuy and Issyk-Kul. However, these regions possess unique characteristics, such as the rich karst landscapes and caves in Osh and Batken regions, the reservoirs of Jalalabad, and the picturesque Son-Kul Lake and vast Jailoo in Naryn region, which offer distinct tourism opportunities.

First, Kyrgyzstan is rich in tourism resources and has its own special characteristics and is known as the "Little Switzerland of Central Asia". Alpine mountains, canyons and lakes are also found in southwest China, northwest China and the Tibetan Plateau, but southwest China is rich in precipitation and high in clouds, lacking the visual experience

of clear weather and high atmospheric transparency. Glaciers and pastures are mainly found in the northwest of China and on the Tibetan Plateau, but these regions are very vast and the distances between attractions are long, which makes traveling long distances more tiring for tourists. On the other hand, Kyrgyzstan has a relatively balanced distribution of natural tourism resources, and tourists can enjoy unique natural scenery no matter which city or region they visit (Ferreira *et al.*, 2020).

Secondly, Kyrgyzstan borders the territory of China and has a better location advantage as the traveling distance is relatively close to other Central Asian countries (Hussain, 2023). Kyrgyzstan is located in the western part of the Tian Shan Mountains and the western part of the Pamir Plateau. The two geomorphic regions of Tian Shan and Pamir Plateau are well known in China, and the unique geographical scenery attracts Chinese tourists. Transportation There are direct flights from Xi'an, China to Bishkek, the capital of Kyrgyzstan, about 4.5 hours flight, and direct flights from Urumqi to Bishkek, about 2 hours flight, which are both relatively comfortable travel times. Kyrgyzstan's eating habits do not differ much from those of North-Western China, and Chinese tourists can adapt to Kyrgyz cuisine relatively well.

Thirdly, China and Kyrgyzstan have a long history of interaction and cultural affinities. The Kyrgyz, the main ethnic group of Kyrgyzstan, and the Kyrgyz, who live in China, are of the same origin. The Kyrgyz are a part of the Chinese nation and are culturally compatible with other ethnic groups in China. The Tungani living in Kyrgyzstan are descendants of the Hui people who migrated to Central Asia from the Shaanxi and Gansu regions of China in the nineteenth century, and they maintain the living, cultural and linguistic habits of the Hui people of China (Subole, 2020). This is very favourable for Chinese tourists to create an emotional link to Kyrgyzstan. In addition, Chinese people have a strong sense of the Silk Road, longing for the Silk Road that stretches for 2000 years, and have a good emotional foundation for Central Asia, where their ancestors once set foot. For example, Li Bai, China's most famous poet of the Tang Dynasty, is believed to have been born in Sui Ye City, or Suyab, Kyrgyzstan (Zhong, 2000).

Almost all primary and secondary school students in China are required to study the poetry of Li Bai. Almost every Chinese knows and loves Li Bai, and a very large number of the populace are Li Bai's Fans, with strong feelings and longings for his birthplace. China's famous travellers and monks in the Tang Dynasty, Xuanzang in his "Records of the Western Regions of the Great Tang Dynasty" (大唐西域記) once recorded that "the mountain line more than 400 miles to the Daqing Pond, circumference of more than 1000 miles, east and west wide, north and south narrow, negative mountains on all sides, the longitudinal flow of the intertwined, the colour of the greenish-black, the taste of both salty and bitter". "Daqingchi" is believed to be Issykkul Lake in Kyrgyzstan. Xuanzang is very well known in China, and almost every Chinese person knows about Xuanzang and Records of the Western Regions of the Great Tang Dynasty.

The Journey to the West, a long novel based on Xuanzang's journey to the West, is one of China's four classical masterpieces. The famous Chinese history book "Shiji" recorded that the country of DaWan, which was rich in sweat-blooded horses, was passed by Zhang Qian, a diplomat during the Han Dynasty, when he travelled to the Western Regions, and it is believed that the country of DaWan may have been in the Ferghana

Basin, and the capital city of DaWan, the city of ErShi, may have been in Osh City or Osh Region. All this makes Chinese tourists have emotional links to Kyrgyzstan. The people of Kyrgyzstan are hospitable, and the Chinese are friendly and warm, and the people of the two countries can get along very well.

Fourthly, Kyrgyzstan's current level of tourism development is relatively low, preserving the pristine ecology, and there is no over-commercialization. In China in particular, humanistic tourism resources such as ancient towns and heritages suffer from over-commercialization to varying degrees, thus thwarting tourists' travel experience (Bortolotto, 2021). Kyrgyzstan's natural and cultural landscapes, especially historical sites, have retained their original appearance, which will be very attractive to Chinese tourists. Kyrgyzstan maintains originality and depth of experience in horseback riding, Jailoo tours, living in yurts, camping, alpine adventures, glacier tours, making horse milk wine, watching falconry and horse-racing conventions. While these in-depth experience programs have been similarly developed in China's Xinjiang Uygur Autonomous Region, Qinghai Province, and Inner Mongolia Autonomous Region, Kyrgyzstan is clearly more Central Asian in character, with both similarities and distinct differences from China's North-Western region, which is also very attractive to Chinese tourists. Kyrgyzstan is located in Central Asia, and compared with China's Xinjiang Uygur Autonomous Region, Gansu Province, Qinghai Province and Inner Mongolia Autonomous Region is more exotic and mysterious, more attractive. Kyrgyzstan's tourism program is mostly pure play, joined by fewer shopping programs, which is also attractive to Chinese tourists. In addition, Kyrgyzstan has a price advantage with relatively low tourist spending. Kyrgyzstan was a Soviet country in the past historical period, and the Soviet cultural heritage also has a unique attraction for Chinese tourists.

Lastly the "China Outbound Tourism Market Prosperity Report" (2023) points out that healing destinations are likely to see new growth, with Chinese tourists paying more attention to health and related healing and recuperation products, and willing to pursue high-quality products and unique vacation experiences. Kyrgyzstan has a wealth of resources for recreational tourism, for example, Kyrgyzstan is primarily a mountainous country, and the slopes of the lands and plateaus are covered with spruce and fir, which is a natural oxygen bar and is particularly beneficial for travellers suffering from respiratory diseases. Horse milk wine therapy can achieve therapeutic results in treating immune system and gastrointestinal disorders. Mud therapy and mineral baths at Issyk-Kul Lake help to strengthen the body and normalize metabolic processes.

Kyrgyzstan's infrastructure is relatively poor; it has 34000 km of roads, but transportation is severely limited by the country's high mountainous terrain (Petruccelli and Fabrizio, 2023). Roads must wind up steep valleys, cross mountain passes at altitudes of over 3000 m, and are subject to frequent mudslides and avalanches. In many remote and high-altitude areas, winter travel is almost impossible. There are no specialized highways in Kyrgyzstan. Railroads in Kyrgyzstan are located mainly in the Chuy River valley and the Fergana basin, which was the endpoint of the Soviet railroad system in Central Asia, and with the emergence of the post-Soviet independent states, railroad lines built without regard to administrative borders were cut off by the borders, and railroad traffic was thus severely restricted (Petruccelli and Racina, 2021). Small sections of railroad lines in Kyrgyzstan, with a total length of about 370 km, are short and not networked, with low transport value.

In addition, Kyrgyzstan and China's Xinjiang are separated by the high Tian Shan Mountains and the Pamir Plateau, and the lack of railroad lines of communication has prevented some tourists from Xinjiang from traveling to Kyrgyzstan by land transportation. Kyrgyzstan is a mountainous country, and it is difficult to lay fibre optic cables in mountainous areas. As a result, more than 70% of the network is concentrated in major cities such as Bishkek, and scenic areas, especially natural geographic landscapes, lack Wi-Fi, which is a major inconvenience for tourists, especially adventure tourists. The road networks of Kyrgyz Republic present at figure 8.

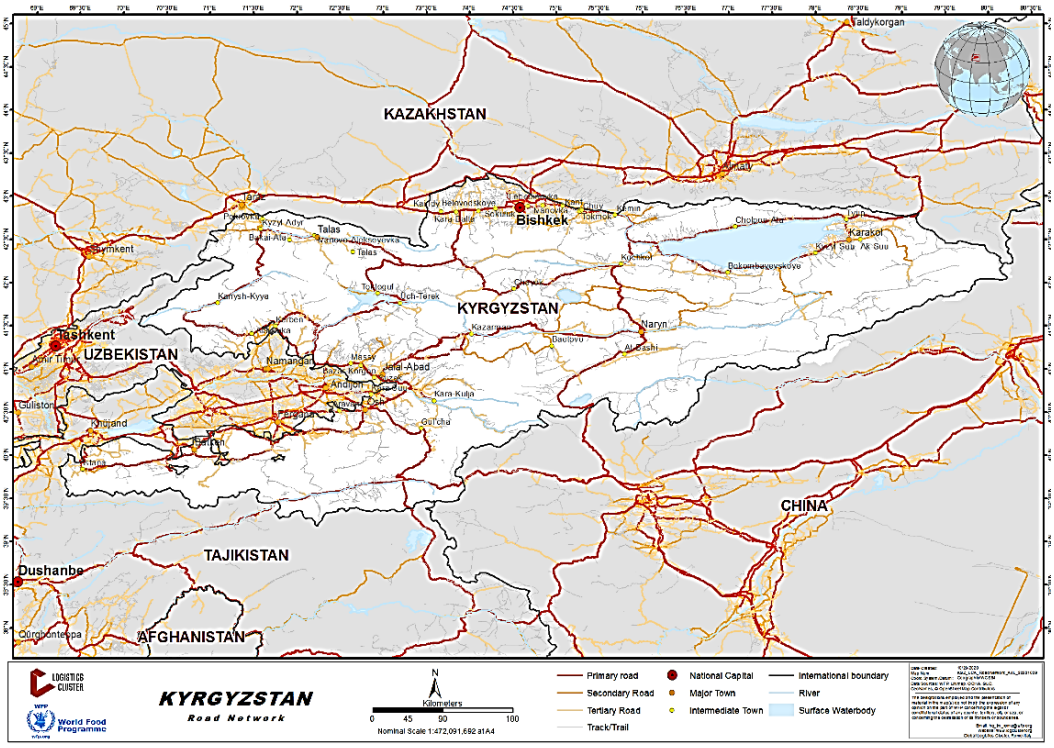

Figure 8: Kyrgyzstan road network map [*Source*: Kyrgyzstan Road Network (2020)]

There is a certain degree of duplication and homogeneity of resources in the natural category of tourism in Kyrgyzstan. For example, there is a lack of more obvious distinctions between different canyons, passes, snow-capped mountains, glaciers, and pastures. Moreover, the small size of Kyrgyzstan does not allow for the formation of relatively clear horizontal zonal differences in the landscape. It is easy to cause aesthetic fatigue and travel distress while traveling. The distribution of tourism resources in the humanities category in Kyrgyzstan is relatively clustered, and the degree of regional development is uneven.

The public in China knows less about Kyrgyzstan, probably due to the fact that the country is less publicized towards China and Kyrgyzstan itself has not been able to become a popular tourist destination in the international arena. The common languages of Kyrgyzstan are Russian and Kyrgyz, both of which have fewer commonalities with Chinese, which may cause communication barriers between tourists and tourist service

staff. The lack of Chinese road signs and brochures in Kyrgyzstan's scenic spots can cause inconvenience to Chinese tourists. Most of China's most economically developed regions are in the eastern coastal areas, such as the Yangtze and Pearl River Deltas, which are farther away from Kyrgyzstan and have certain disadvantages in terms of location (Bieliatynskyi *et al.*, 2022).

2023 year will mark the tenth anniversary of the great BRI, which brings new opportunities for cooperation and exchanges between the two countries. According to the Statistical Yearbook of Kyrgyzstan (2022), China is the second largest source of foreign investment in Kyrgyzstan, with Chinese direct investment in Kyrgyzstan accounting for about 26.3%. With the deepening of trade between the two countries and the further development of the BRI, more and more Chinese enterprises will invest in Kyrgyzstan, and the increase in the number of Chinese will, on the one hand, strengthen the understanding and publicity of Kyrgyzstan to the Chinese people and, on the other hand, enhance the security of Chinese tourists traveling to Kyrgyzstan (Kerimkhulle *et al.*, 2023a). The new era of business travel will also become a new reason for Chinese to travel to Kyrgyzstan. China Tourism Research Institute in August 2023 released the 2023 outbound tourism big data report shows that in 2023, Chinese tourists outbound travel destination stay time, in the BRI along the single destination to stay the longest. With the deepening of cooperation related to the BRI, mainland residents are more willing to travel to countries along the BRI and stay longer. Among the top 20 destinations with the longest length of stay in a single destination, countries along the BRI accounted for 70%. Looking at the 19 typical regions, tourists' average length of stay in South, Southeast, and Central Asian destinations is the longest, at 2.64 days, 2.61 days, and 2.46 days, respectively. Kyrgyzstan is also included in the top 20 destinations where outbound tourists from the mainland (China) stayed the longest in the first half of 2023. In the China Outbound Tourism Market Prosperity Report (2023) released by the World Tourism Alliance (WTA), it is pointed out that the countries that show strong signals of friendship to China will see a significant increase in outbound travel by Chinese tourists. It is believed that with the further development of the BRI in the future, both China and Kyrgyzstan will see new growth in trade exchanges and cultural and tourism exchanges.

In November 2022, Kyrgyz President Zaparov announced that the construction of the China-Kyrgyzstan-Uzbekistan Railway would begin in the fall of 2023. The China-Kyrgyzstan-Uzbekistan Railway is an important part of the New Asia-Europe Continental Bridge, and after its completion, it has effectively solved the drawbacks of the lack of land transportation between China and Kyrgyzstan due to the obstacles of the Tian Shan Mountain terrain (Makhatova *et al.*, 2021). On the one hand, it will strengthen trade between China, Kyrgyzstan and Uzbekistan, and on the other hand, it will facilitate travel and communication among residents of the three countries. The completion of the China-Kyrgyzstan-Uzbekistan Railway will inevitably lead to the development of tourism in Kyrgyzstan.

The Central Asia Summit was successfully held in Xi'an, China, on May 18-19, 2023, with President Zaparov of Kyrgyzstan attending the meeting. The leaders of the six China-Central Asia countries signed the Xi'an Declaration of the China-Central Asia Summit (2023), marking a new level of engagement between China and Kyrgyzstan,

which may also lead to cultural exchanges and tourism development between China and Kyrgyzstan.

China and Kyrgyzstan have strengthened academic exchanges in recent years, sending each other foreign students and scholars for academic exchanges (Shi, 2019). On June 2, 2023, the Institute of Central Asian Studies and the Silk Road Research Institute of Northwestern University in China, in conjunction with several high-end think tanks in Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, established the China-Central Asia Think Tank Alliance. On June 27, 2023, the Inauguration Ceremony of the Centre for Kyrgyz Studies at Northwestern University and the Academic Exchange Conference on Achievements and Prospects of China-Kyrgyzstan Cooperation were successfully held. The Kyrgyz National University and the Osh Technical University have established cooperation with Chinese universities and colleges, jointly training students and conducting academic exchanges. Renmin University of China, Henan University and other universities have set up Silk Road colleges for educational and international cultural exchanges. The exchange of cultures between the two countries may lead to mutual understanding between the people of the two countries, which in turn will lead to the development of tourism in both countries (Ead *et al.*, 2021).

In the future, as Kyrgyzstan's market for Chinese tourists expands further, it may put pressure on Kyrgyzstan's scenic environment. The point here is not that Chinese tourists lack environmental awareness, but that when the number of tourists increases, it inevitably creates environmental pressure. Therefore, localities must implement environmental protection plans and measures during tourism planning and construction (Voitovych *et al*., 2023). Also, with the development of tourism in Kyrgyzstan, there is a risk of over-commercialisation and consequent loss of local identity, which also needs to be guarded against. Over-commercialization has the potential to harm both the local culture of Kyrgyzstan and the tourist experience of Chinese visitors, thereby negatively impacting the tourism market (Denissova *et al*., 2021). Additionally, when a large number of tourists flock to a scenic spot, they may encounter the issue of inadequate infrastructure to handle the situation. This insufficient infrastructure could lead to a less satisfactory experience for tourists, potentially affecting their evaluation and promotion of Kyrgyzstan's scenic spots. Finally, with the development of tourism in Kyrgyzstan, there may be homogenisation and malicious competition in the construction of scenic spots, hotels, and tour companies, and this also needs to be guarded against.

There is a need at the governmental level to expedite the construction of the China-Kyrgyzstan-Uzbekistan railroad and improve the country's infrastructure. A perfect road network, on the one hand, can promote the development of tourism in the country, increase employment, facilitate resident travel, drive economic development, promote cultural exports, and attract foreign investment (Poltorak *et al*., 2023). On the other hand, the construction of infrastructure in itself is a kind of industrial development that can pull the development of raw materials, energy, construction, tourism, and other industries. Legislation, planning, and other measures strengthen the potential for environmental damage, homogenization, over-commercialization, and malicious competition resulting from the construction and development of tourist attractions (Sun *et al*., 2020). Do a good job of overall tourism planning, long-term planning, excavation, giving play to local characteristics, doing a good job of cultural preservation of their own

region, and doing a good job of consistent and coordinated development of the country to avoid harming long-term interests for the sake of short-term interests.

Strengthening the management of tourism enterprises to avoid overexploitation or mis-exploitation by enterprises for short-term benefits, which may damage the environment and cultural characteristics of the country. Strengthening promotion at the national level by undertaking and utilising major international events, such as sports games at all levels, academic exchanges, and summits, to promote the country's tourism resources and attract tourists (Kyrylov *et al.*, 2020; León-Gómez *et al.*, 2021). Joining forces with other countries along the Silk Road to jointly publicise the characteristics of Central Asia. Protective development of Silk Road sites with common memories of the two countries and construction of thematic venues for Chinese tourists to awaken their memories of the Silk Road, such as the construction of the Suyab. The government can first utilise the relatively developed areas of tourism in Issyk-Kul and Chuy regions to attract a group of tourists and then plan routes to utilise the developed areas to drive the backward areas in order to achieve the coordinated development of the whole country. The government can give preferential policies to attract Chinese tourism companies to develop and build in Kyrgyzstan. Internet infrastructure in scenic spots needs to be strengthened to provide foreign tourists with more convenience and a sense of psychological security. The cultural and tourism governments of China and Kyrgyzstan can strengthen cooperation and build friendly cities.

At the level of travel agencies and tourism enterprises, Tungani people or school students with language advantage, Chinese students and Confucius Institute students can be employed as tour guides, interpreters, and other service personnel, in order to alleviate the language barrier and cultural barriers with Chinese tourists (Gimranova *et al.*, 2023). It is possible to specialize in the development, operation and management of the business for Chinese tourists. Tourism companies can organize staff to learn Chinese culture and design special routes and services for Chinese tourists (Mojseyenko, Revak and Demchyshyn, 2013). Tourism enterprises can organize staff to learn Chinese culture, design special routes and services for Chinese tourists, strengthen cooperation with Chinese travel agencies, launch Kyrgyzstan's Silk Road tourism routes, and invite guides or other staff of Chinese travel agencies to Kyrgyzstan for research and joint development of routes. Travel agencies can design rich travel routes, design different travel routes for different Chinese mass portraits, different age groups, different occupations, different levels of consumption, do a good job of researching and designing appropriate travel routes and services (Stepanchuk, Bieliatynskyi and Pylypenko, 2020). China has also seen the emergence of college students' "special forces" type of tourism in 2023. College students are generally weak in wealth, but they are physically strong, have good language skills and are good at publicity, so travel agencies can launch travel itineraries geared towards Chinese college students. Study tours in China have become increasingly popular in recent years, especially during the summer vacation of primary and secondary schools in July and August each year. Study tour is a kind of out-of-school practical activity combining research study and travel experience, focusing on broadening students'' horizons and cultivating their life skills, collective concepts and practical abilities (Lu, 2023; Mamirkulova *et al.*, 2020).

The rapid growth of tourism in Kyrgyzstan, driven by the Belt and Road Initiative (BRI), presents both opportunities and challenges. On the environmental front, the influx of tourists could place significant pressure on Kyrgyzstan's natural landscapes, which are among the country's most valuable tourism assets. Increased foot traffic in sensitive areas such as mountain ecosystems, lakes, and glacier regions could lead to soil erosion, vegetation damage, and disturbances to wildlife. The strain on local resources, including water and waste management systems, may exacerbate the environmental degradation if not managed carefully. Additionally, the development of infrastructure to support tourism, such as roads and hotels, risks disrupting the pristine natural environments that attract visitors in the first place.

Culturally, the surge in tourism may lead to the commercialization of Kyrgyzstan's rich heritage, potentially diluting the authenticity of local traditions and customs. As more visitors seek to experience traditional Kyrgyz culture, there is a risk that cultural practices might be altered to cater to tourists' expectations, thereby losing their original significance. Moreover, the influx of foreign tourists could create cultural clashes or tensions, particularly if there is a lack of cultural sensitivity or understanding. These impacts could erode the unique cultural identity of local communities, turning genuine cultural experiences into mere attractions. Therefore, it is crucial for policymakers and tourism operators to implement strategies that balance tourism growth with the preservation of both the environment and cultural heritage, ensuring sustainable tourism development that benefits local communities without compromising their identity.

Travel agencies in Kyrgyzstan can also design study tours for Chinese students of different age groups, which can not only promote the country's culture but also attract Chinese parents to bring their children to visit. In addition, summer vacation is the peak season for tourism in China and Kyrgyzstan. July-August is the hottest period of climate in China every year, and many Chinese people will tend to choose areas with cooler climate to escape the summer heat, and Kyrgyzstan, due to its higher altitude and lower temperature compared to China, can be a destination for summer vacation tourism. Summer vacation tourists often choose to stay for a relatively medium to long period of time, for example, 15 days to a month, so travel agencies pay attention to the price control of food and accommodation and the coordination of tourism activities when designing their services.

Finally, China's current self-media industry is booming, and in the era of mobile internet, Chinese people receive a huge amount of information through their cell phones every day. Therefore, travel agencies in Kyrgyzstan can also contact Chinese self-media bloggers and place advertisements on different platforms, as well as invite them to Kyrgyzstan to experience the country and shoot vlogs for publicity. When publicizing, try to choose the active pushing method, because Kyrgyzstan is not highly searched in China, just by waiting for the people to search automatically, the information is likely to be drowned out and cannot be found by potential tourists. At the scenic area level, Chinese slogans, brochures, and route maps need to be specially designed and distributed to tourists. Hotels and restaurants need to create Chinese menus, which should not be text-only, but should be accompanied by pictures to make it easier for tourists to make choices. The scenic area introduces Chinese restaurants to help Chinese tourists adapt to the diet.

Discussion

Thus, Kyrgyzstan has a significant number of different kinds of attractions, including a variety of landscapes (related to geological features of the area), water bodies, historical monuments, parks, cultural sites, as well as religious sites. The mountainous regions of Kyrgyzstan offer rich opportunities for mountain tourism, various glaciers and pastures. In addition, the country has 1923 lakes, many rivers, and reservoirs. All this makes tourism in the country quite attractive, especially for Chinese citizens. Nevertheless, it is worth realizing that in order to maintain the situation in such a form, it is worth actively working on the development of tourism and further, and, in particular, to protect historical, natural and cultural values.

The role of tourism in economic growth on empirical data from Saudi Arabia was studied by Naseem (2021). The results of the study showed that tourism has a positive impact on the economic development of the country. In this regard, the scientist proposed recommendations related to increasing attention for this industry on the part of government officials. It should consist of improving infrastructure, simplifying visa application processes for foreign tourists. Rasool, Maqbool and Tarique (2021) conducted a similar study on the relationship between tourism and economic growth in the BRICS countries (Brazil, Russia, India, China, and South Africa). The study found that there is a strong long and short-term positive relationship between tourism and economic development in these countries. Therefore, scholars recommend that resources should be allocated to support the tourism industry to a comparatively greater extent than is currently the case. Policy makers should consider the significant impact of tourism on the economy and encourage the tourism industry towards sustainable economic growth (Jawabreh *et al.*, 2023). It is worth noting that the study also partially mentioned recommendations on how to improve the situation in terms of tourism development in Kyrgyzstan, and they are generally similar to those mentioned by the authors of the works assessing the situation in Saudi Arabia and the BRICS countries.

Many scientists have been engaged in the assessment of tourism development in the world. Roziqin *et al.* (2023) evaluated the trends in digital tourism. They noted that there is a growing influence of information technology on the tourism industry, which forces regional companies or institutions to cooperate with innovative technology manufacturers to be able to implement it. The paper also outlined practical recommendations for tourism managers and policy makers to adopt broad strategies to cater to diverse tourism needs, especially with a focus on millennial, meta-tourism and virtual tourism. Managers were advised to adapt to the peculiarities of the new digital era, while policy makers were encouraged to provide economic incentives, build digital capacity and establish committees to monitor and develop digital tourism, and take a holistic, integrated and long-term planning approach (Tleppaev and Tovma, 2017). The study of tourism development opportunities in Kyrgyzstan has paid rather little attention to the problems of digitalization. However, it should be noted that this component is also very important in terms of ensuring a more stable flow of tourists to Kyrgyzstan. Thus, it remains relevant to ensure the development of technology in the country in general, and in the field of tourism.

World trends and tourism development in peripheral regions have been reviewed by Ianioglo and Rissanen (2020). The article provided a tourism development framework consisting of four main elements designed to promote regional/urban tourism development, using Kemi in Finnish Lapland as an example. Researchers showed that although the region has significant potential for tourism development through natural and historical attractions. Nevertheless, the town lacks the latest infrastructure, which does not allow to lure tourists actively enough. In addition, the researchers suggest strengthening the town's image and developing local urban facilities. The assessment of the situation in the tourism sector in Kyrgyzstan did not focus on individual towns and villages, but considered the development of the industry in general, at the state level. Nevertheless, if we evaluate what actions should be taken by the state and local authorities to increase the popularity of tourism among other countries, one of the main directions should be the improvement of local infrastructure, as well as the formation of a better image of the town using the media, "word of mouth" (Reznik *et al.*, 2021).

Trends in the economic development of the tourism industry in the European Union were studied by Filipiak, Dylewski and Kalinowski (2023). The scholars showed that low-growth countries focus on digitalisation and sustainability to improve their market position, influencing sustainable economic development. They write that it is this factor that has recently become crucial for the development of the tourism industry, surpassing the influence of sustainability variables. The relationship between gross domestic product and tourism has also been described. Therefore, recommendations were described to improve the situation in general, namely, to raise public awareness of the relationship between the tourism economy and sustainable economic growth. It is worth noting that in Kyrgyzstan, too, the issue of achieving sustainable development goals is currently acute. This is particularly evident in the preservation of natural and cultural resources, which remain the main factors in attracting tourists to the country. Thus, it is important for public authorities in the country to develop public policies that effectively monitor the achievement of sustainable development goals and adhere to all the rules described within the current legislation (Gkoumas, 2019; Yoopetch and Nimsai, 2019).

Kyrgyzstan can be considered a promising destination for Chinese tourists due to its rich and balanced natural tourism resources, geographical proximity, historical and cultural similarities, and underdeveloped tourism that preserves pristine ecology. In addition, the country has direct access to Chinese cities, which simplifies logistics, while cultural ties and a low level of tourism development prevent excessive commercialization (Rakauskienė and Petkevičiūtė-Stručko, 2022). In addition, Kyrgyzstan offers a variety of experiences such as horseback riding, yurt accommodation and alpine adventures. At the same time, there are some problems that reduce the motivation of tourists to visit Kyrgyzstan. This can include poor infrastructure, communication barriers, and the risk of environmental pressure and over-commercialisation with the growth of tourism (Kerimkhulle *et al.*, 2023b). To overcome these problems, the China-Kyrgyzstan-Uzbekistan railway can be built, infrastructure can be improved, environmental protection measures can be taken, and excessive commercialisation can be avoided. In addition, efforts should focus on promoting cultural exchange, strengthening academic ties and using international events for publicity (Silagadze, Atanelishvili and Silagadze, 2022).

At the state level, it is crucial to carry out strategic planning of plans for the development of the tourism sector of Kyrgyzstan in the direction of China. In addition, appropriate changes in the legislative framework should be made. Travel agencies and tourism enterprises should hire Chinese-speaking staff, adapt services to different segments of Chinese tourism and co-operate with Chinese travel agencies. It would also be helpful to ensure more detailed dissemination of information on existing opportunities to visit tourist destinations in Kyrgyzstan. Implementing such a policy will also make relations between China and Kyrgyzstan friendlier, which will have a positive impact on many other sectors of the economy.

Based on the findings, policymakers and tourism industry stakeholders in Kyrgyzstan should prioritize sustainable tourism practices that protect the country's natural and cultural heritage. This includes implementing strict environmental regulations to manage the impact of tourism on sensitive ecosystems, such as limiting visitor numbers in high-risk areas and promoting eco-friendly infrastructure. Cultural preservation should be supported by encouraging community-based tourism initiatives that empower local populations to maintain and share their traditions in authentic ways. Additionally, stakeholders should focus on developing educational programs for both tourists and locals to foster mutual understanding and respect, minimizing potential cultural conflicts. Investing in infrastructure that balances accessibility with environmental conservation, such as eco-lodges and sustainable transportation, will be key to ensuring that tourism growth does not come at the expense of Kyrgyzstan's unique landscapes and cultural identity. Collaboration between government agencies, local communities, and international partners will be essential to crafting policies that support long-term, responsible tourism development.

Conclusion

Upon organizing and screening Kyrgyzstan's tourism resources and conducting a geospatial analysis, we discovered that the country possesses an abundance of diverse tourism resources, each with unique local characteristics. Kyrgyzstan’s natural tourism resources and historical monuments are relatively decentralised and are found in all regions of the country. Natural tourism resources and historical monuments are relatively more concentrated in the Chuy and Issyk-Kul regions, which are densely populated and more developed, with more established attractions. Kyrgyzstan has a high concentration of human tourism resources, especially in the Bishkek, Chuy, and Issyk-Kul regions. The distribution of tourism resources in Talas, Naryn, Jalalabad, Osh, and Batken districts is relatively decentralised and small, but each of these regions has its own characteristics.

On the basis of combing and analysing Kyrgyzstan’s tourism resources, the article makes a SWOT analysis of Kyrgyzstan’s tourism development for Chinese tourists in the context of the BRI, and concludes that the main advantages of Kyrgyzstan’s tourism resources are richness and local characteristics, location and geographic advantages, cultural communication between China and Kyrgyzstan, Chinese tourists’ sentiment for the Silk Road, the tourism resources of Kyrgyzstan are generally kept in the original ecology and have a price advantage as well as the abundance of recreational and cultural tourism resources. The main weaknesses are the backwardness of Kyrgyzstan’s

infrastructure, a certain degree of repetitiveness and singularity and uneven distribution of tourism resources, the Chinese people's lack of understanding of Kyrgyzstan, the existence of language barriers, and the distance from China's main source of customers in the South-Eastern coastal region. Opportunities for development are the deepening exchanges between China and Kyrgyzstan in the context of the BRI, the upcoming construction of the China-Kyrgyzstan-Uzbekistan Railway, the increasing improvement of the infrastructure between China and Kyrgyzstan, the sending of international students to colleges and universities in China and Kyrgyzstan, the strengthening of cooperation, and the deepening of academic and cultural exchanges. The main threats are that, as the number of tourist increases, it may put additional pressure on Kyrgyzstan's ecological environment, and that over-exploitation or malicious competition may develop among tourism enterprises for short-term gains, damaging the long-term interests of tourism and the country's cultural identity.

Based on this, this paper puts forward some suggestions for Kyrgyzstan's tourism development, the government can facilitate the construction of the China-Kyrgyzstan-Uzbekistan railroad as soon as possible, improve the infrastructure, do a good job of overall planning and long-term planning, and policy guidance for tourism enterprises to rationally develop and protect the country's culture. At the level of travel enterprises, they can strengthen cooperation with Chinese travel agencies, enhance publicity and design travel itineraries for Chinese tourists, send staff to China for research, invite Chinese tour guides and other tourism staff for research and study tours, invite Chinese self-media bloggers to travel to Kyrgyzstan and shoot vlogs for publicity, learn about the Chinese language Internet ecosystem, improve their operations, and hire Tungani ethnic people and university students in school, Improve operation methods, hire Tungani, college students, and Chinese students as tourism service staff during peak seasons, and reduce language and cultural barriers for tourists.

Capitalize on China's summer tourism boom and develop study tours, summer vacation tours, and other special tourism routes. Attention is paid at the level of scenic spots and hotels to improving Chinese road signs, brochures and menus. The study can provide a reference for the development and protection of tourism resources in Kyrgyzstan and cultural exchanges between China and Kyrgyzstan.

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Author's Declarations and Essential Ethical Compliances

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	Author 1	Author 2	Author 3	Author 4	Author 5
Conceived and designed the research or analysis	Yes	No	Yes	No	No
Collected the data	No	No	Yes	Yes	No
Contributed to data analysis & interpretation	Yes	Yes	No	No	Yes
Wrote the article/paper	No	Yes	No	Yes	No
Critical revision of the article/paper	Yes	No	No	Yes	Yes
Editing of the article/paper	No	Yes	Yes	No	Yes
Supervision	Yes	No	No	Yes	No
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Research involving human bodies or organs or tissues (Helsinki Declaration)
The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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The author(s) solemnly declare(s) that this research has involved dairy cows (body or organs) for experimentation. The research was not based on laboratory experiment involving cattle. Other contexts of animals were only indirectly covered through literature review. Therefore, an ethical obligation of ARRIVE applies in cases of this study or written work. The ARRIVE Checklist is appended.

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